Wood Burning Trends on Utah's Wasatch Front

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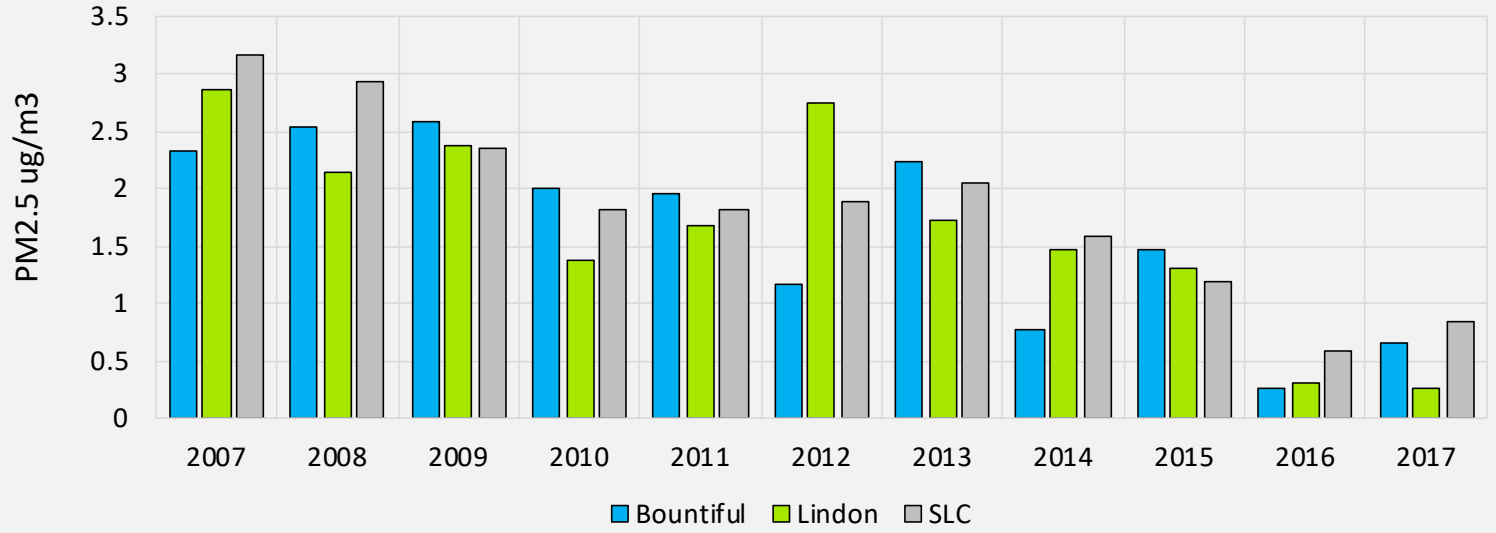
Methods

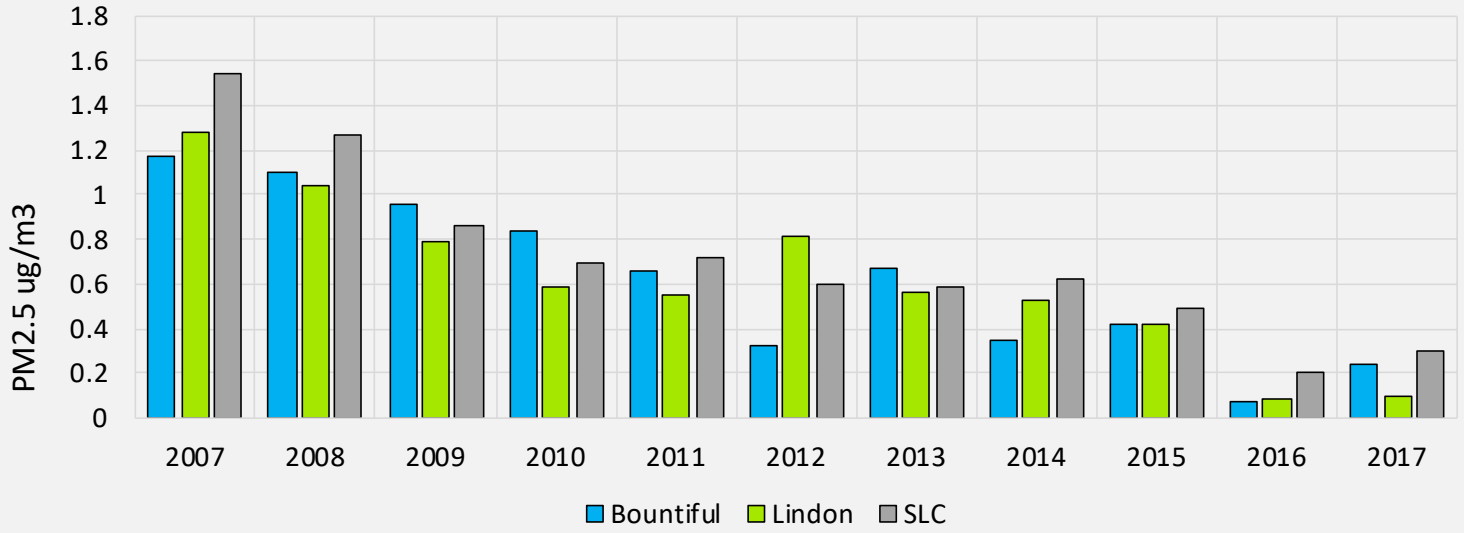
- Composition from $PM_{2.5}$ samples (2007 – 2017)
  - Lindon and Bountiful: 1 in 6 days
  - Hawthorne: 1 in 3 days
- Statistical tool (positive matrix factorization)
  - PM from woodburning has a different composition than PM from diesel
- Instrument that indicates woodsmoke (2018)
  - PM from wood burning has a different light adsorption pattern
  - Mobile measurements
  - Stationary measurements at Bountiful, Lindon, and Smithfield

Fresh & aged wood burning contributions to direct $PM_{2.5}$



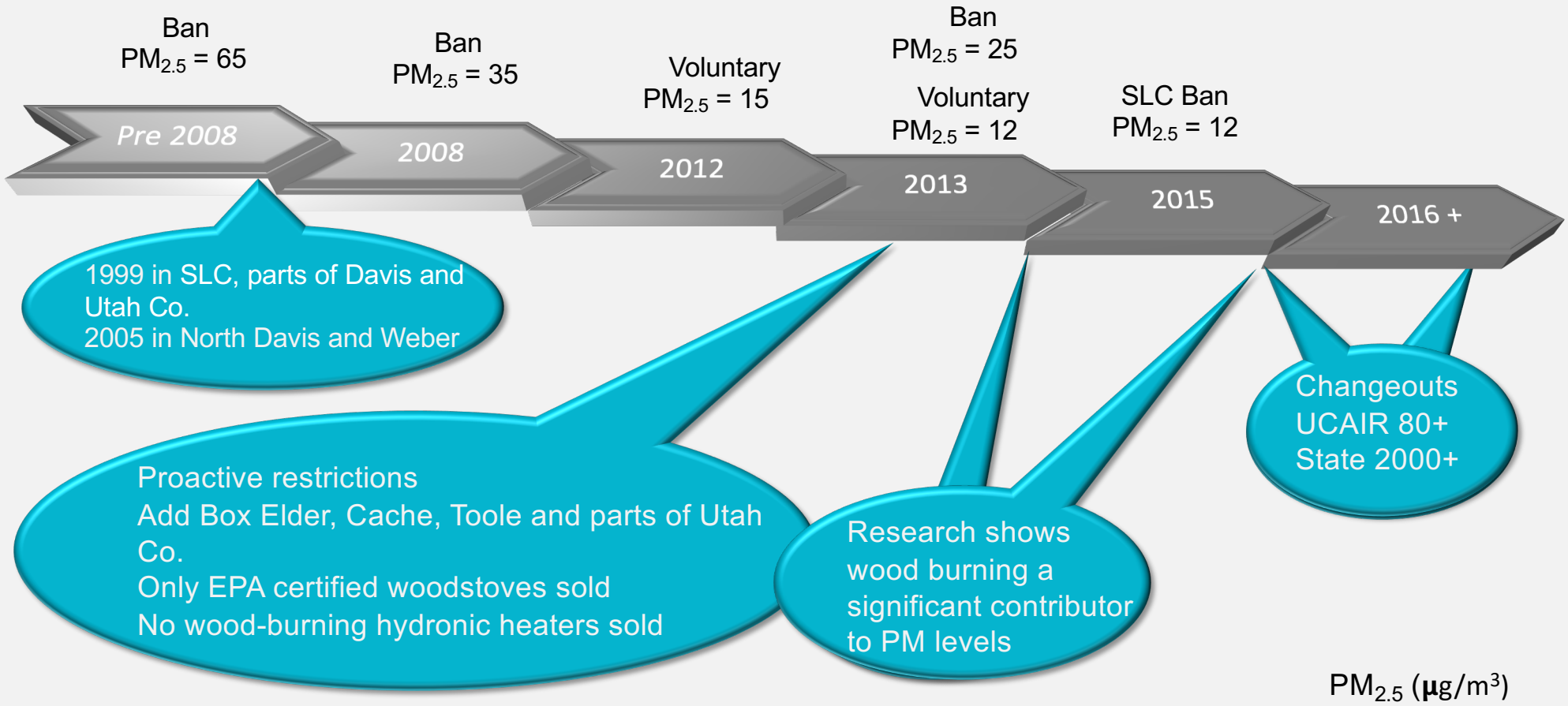
Winter

Fresh & aged wood burning contributions to direct $PM_{2.5}$ (normalized by heat deficit)



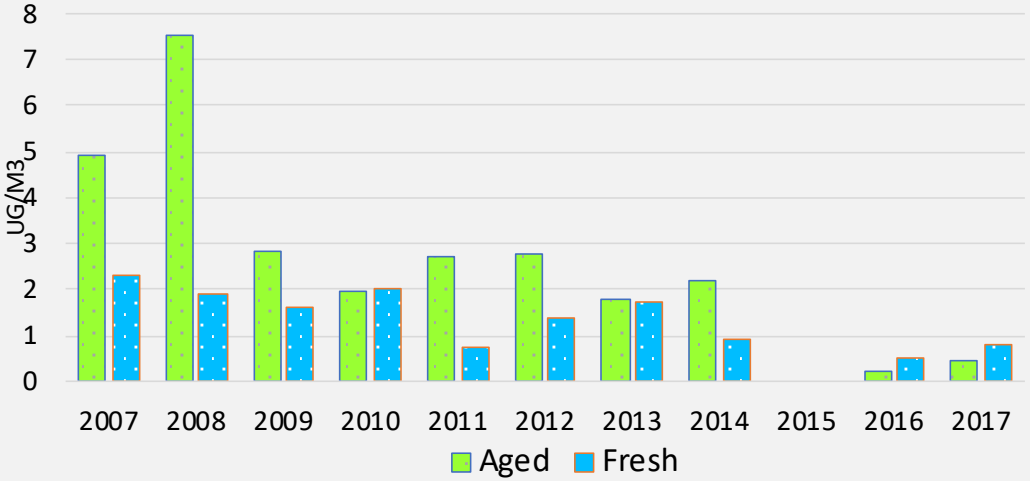
Winter

Efforts to reduce woodburning in our $PM_{2.5}$ non-attainment areas

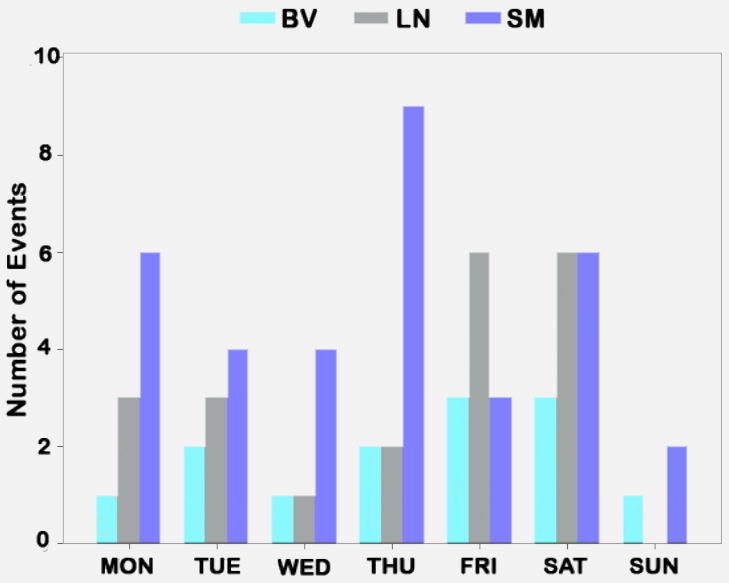


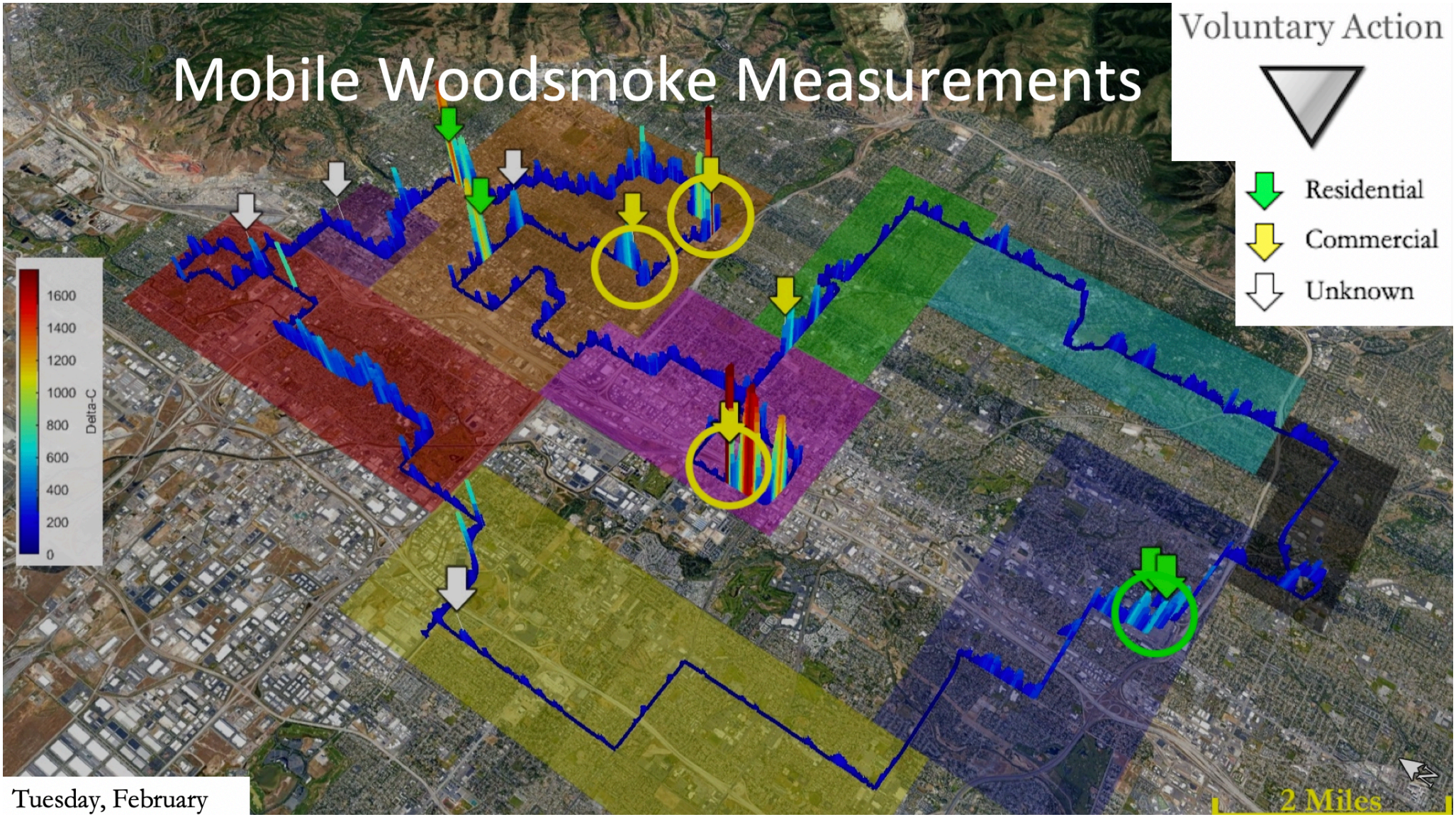
Evidence of woodburning on mandatory action days

Hawthorne winter (limited days)



2018 (continuous)



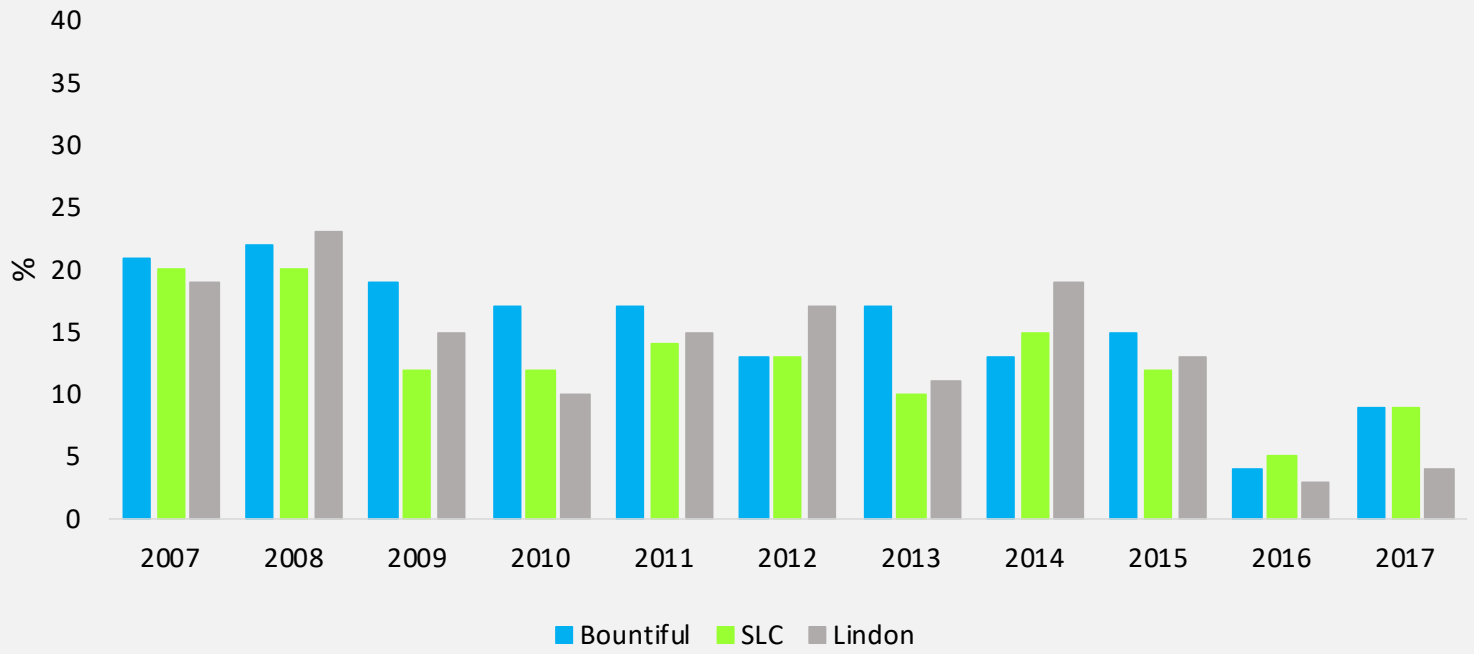

Mobile Woodsmoke Measurements
Voluntary Action
Residential
Commercial
Unknown
Delta-C
1600
1400
1200
1000
800
600
400
200
0
Tuesday, February
2 Miles

Summary

- Contribution of woodburning to $PM_{2.5}$ levels are declining
  - Statistically significant trend
  - All three locations
  - Efforts to reduce wood burning appear to be effective
- Evidence of woodburning on no-burn days
  - 2007 to 2017 samples every 3 or 6 days
  - 2018 hourly
- Commercial woodburning contributes to $PM_{2.5}$ levels:
  - Some opportunities for communication/voluntary reduction
  - Consider direct PM emissions as part of a permit or defining a “major” source a SIP

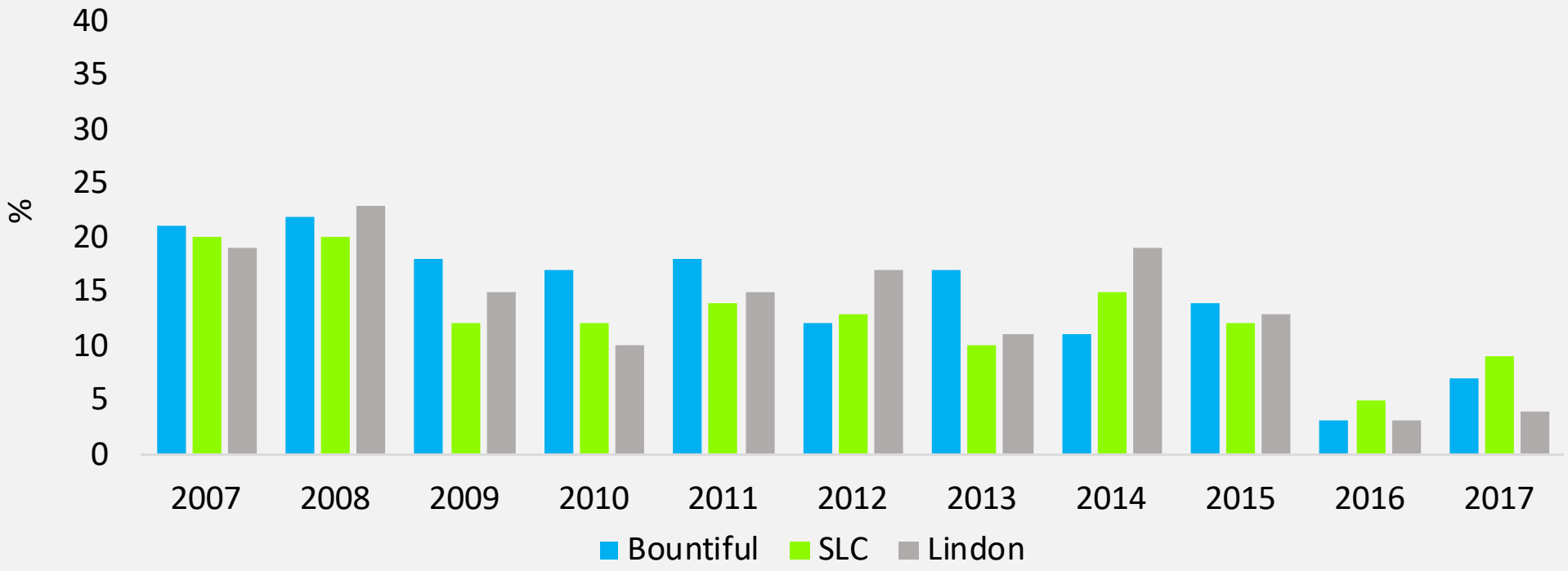
Supplementary Slides

Fresh & aged wood burning contributions to direct $PM_{2.5}$



Winter

Fresh & aged wood burning contributions to direct $PM_{2.5}$ (normalized by heat deficit)



Winter